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Strategies for Influencing the Standardization Process: Examples from Within

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STRATEGIES FOR INFLUENCING THE STANDARDIZATION PROCESS – EXAMPLES FROM WITHIN

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Abstract This paper presents some factors and explores the strategies utilized by companies for influencing the standardization process in mobile telecommunication. The paper is based on an in-depth case-study of the Open Mobile Alliance (OMA). In the paper I divide the companies into different types; Operators, Manufactures and application vendors and establish some common strategies used by the different type of actors. I find that the operators and the large manufacturers have a vertical approach where they try to influence every part of the value chain/domain they are part of. They would like to control everything from the core infrastructure to the services running on top of it and work together in many standardization organizations to uphold this control. The application vendors have a horizontal approach. The majority of application vendors have no hope of dominating the whole value chain they are a part of and rather opt for a part in many different value chains. Since their products are more adoptable they tend to be present in standardization within more domains/value chains.

The operators are most influenced by time-to-market, the manufacturers by IPR and the application vendors by customer relationship. They are all concerned with alliance building

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Keywords: Standardization, Strategies, mobile industry, development processes and strategies

1 INTRODUCTION

One set of strategic decisions actors in the mobile telecommunication sector have to decide on are if they want to standardize their products and services and if so, where they want to pursue their standardization work. The mobile telecommunication infrastructure is a highly standardized infrastructure, and the market where new telecommunication services are introduced is a global many-sided market. In this setting the development of new infrastructure enhancement and services are in need of some degree of coordination. Coordination can be achieved through standardization or through the direct influence of one dominant actor. The actors like operators, manufactures, content providers and IT providers have their own business goals and different attitude towards openness and standardization depending on factors like size, primary markets and place in the value chain. Even if the mobile market is perceived as a global market, the markets in the U.S. Europe and Asia differs (Zhang and Prybutok 2005). In Europe there are no dominant pan-European operators (Maitland, Bauer et al. 2002; Whally and Curwen 2006). Standardization is then the most likely tool for a coordinated introduction of new mobile services in Europe.

The economic literature on standardization is primarily concerned with the choice of standards in the market and the competition between different existing standards (David and Greenstein 1990). The literature has divided the standards broadly into de facto standards and committee standards, and not been particularly concerned with how the standards have come into existence.

This paper will look at the strategic behavior of different actors in creating standards within a standardization organization. The paper is based on an in-depth case study of the Open Mobile Alliance, the premium standardization consortium for new mobile services. The question the paper will address is: *"What strategies do different actors pursue in their quest for new mobile services, and what factors influence their involvement?"*

One finding from the study is that companies involvement in standardization is not pure technical but also have a strategic aim of promoting themselves towards their peers. The paper argues that a broad set of factors influence companies involvement in standardization and many of these factors are applicable for a set of strategies. The paper also shows that different actor groups have different strategies and aims towards standardization membership. The paper argues that the manufacturers see membership in standardization as a starting point for their product development and also engage in other vertical activities in their value chain, while the IT vendors see membership as a horizontal activity and engage in the same part of different value chains.

The paper is structured as follows. In the next chapter the literature on the strategic options available for companies in pursuing standardization and the factors influencing their choices are presented. Then the case of the Open Mobile Alliance will be introduced followed by the findings from the study. Finally there is a discussion of the findings and a conclusion chapter.

2 STRATEGIES FOR STANDARDIZATION PARTICIPATION

Participation in standardization can be viewed as an aspect of the product development process, when a company is involved in a market with network effects (Weiss and Sirbu 1990). A fundamental assumption in the economic literature on standards is the notion of network effects. A network effect exist when the value a user derives from the consumption of a goods or service is dependent on the number of other users of that product or service (Katz and Shapiro 1985). Network effects are complementary relationships in value creation among adopters of a common standard (Stango 2004).

The overarching strategic decision firms must decide on is whether to engage in a standards battle (war) with other competing technologies or to agree on a common standard up front. The first is

often labeled de facto standardization, while the latter is labeled de jure or committee standardization.

From the literature on strategic positioning of firms in where and how to standardize a "new" product in a network or many-sided market (Katz and Shapiro 1986; Arthur 1989; David and Greenstein 1990; Weiss and Sirbu 1990; Farrell and Saloner 1992; Besen and Farrell 1994; Katz and Shapiro 1994; Grindley 1995; Shapiro and Varian 1999) the following general strategies can be extracted:

- De facto standardization through market domination.
- Licensing in on existing technology
- Develop converters or gateways between technologies
- Create informal alliances with other firms
- Create formal alliances with other firms that have restricted or open membership
- Join an open standardization organization

It is not an either or for companies, but the choices follow a continuum from de facto market standardization by one firm on one side to formal committee standardization on the other side, see figure below.

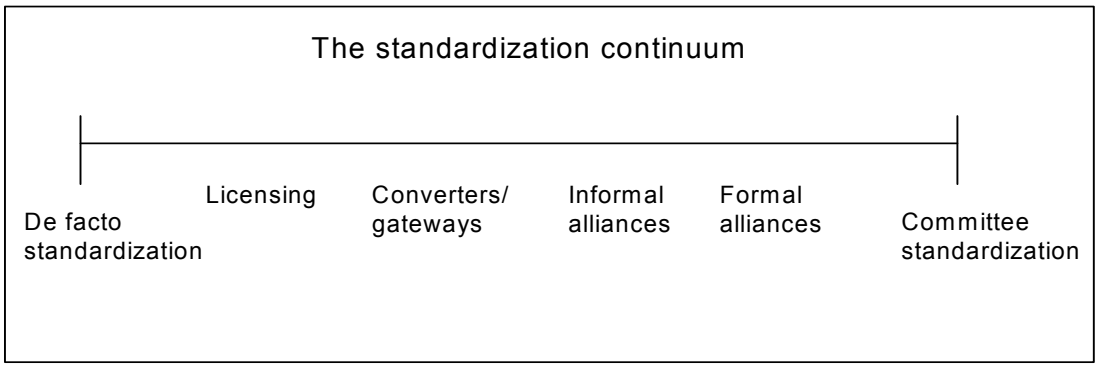

Figure 1- The continuum of options available for companies in pursuing standardization

De facto standardization is often pursued by companies that have a dominating market position. The company will often have a technological leadership in its domain. Factors for this strategy are strong property rights, technological leadership, ability to innovate, large resources, strong differentiation, early entrant (first-mover advantage), large installed base, presence in complementary products or attracting the producers of complements and brand name and reputation (Besen and Farrell 1994; Grindley 1995; Shapiro and Varian 1999).

Licensing in on existing technology is often the choice of late entrants into the market where the company do not possess strong technological know-how or would like to avoid a standards war (Grindley 1995). Licensing can also be a strategy for the dominant actor to attract more producers and strengthening the standard (Chiesa, Manzini et al. 2002).

Converters or gateways can be effective tools to create compatibility between products (Farrell and Saloner 1992; Hanseth 2001). Instead of going head-to-head the companies choose to make their products compatible with their competitors through converters or through gateway systems. This avoids a standards war and utilizes the installed base of both products.

If a company do not possess the market power or resources to unilaterally set the standard it can choose to ally with other to create a standard up front. It can form informal alliances with other firms to enlarge the total market power or get access to complementary products that will strengthen the standard (Besen and Farrell 1994; Shapiro and Varian 1999). The next step is to create a more formal alliance with other companies. In the telecommunication sector we can se this in the standardization of operating systems for handsets where some large manufactures have

established the Symbian alliance to counter for the de facto standardization by Microsoft (Iversen and Tee 2006) and in the establishment of new short range air interfaces with the Bluetooth alliance (Keil 2002).

In creating alliances firms are influenced by a range of factors. Some factors that influence their choice are: Size of alliance, number of close rivals present, presence of companies with compatible products, market power of alliance and the active support and promotion by members (Weiss and Sirbu 1990; Axelrod, Mitchell et al. 1995). One factor that does not seem to influence the choice of technology in development of cooperative standards is the installed base (Weiss and Sirbu 1990). Factors that influence the standard setting process within an alliance or a standard organization are the IPR of companies, the presence of complimentary products, timing of the standardization process, the active involvement of companies in producing written specifications, strength of the alliance and market power of buyers involved in the standardization (Weiss and Sirbu 1990; Grindley 1995; Shapiro and Varian 1999; Jakobs, Procter et al. 2001; Chiesa, Manzini et al. 2002).

It is futile to draw a strict line between the factors influencing and strategies used by firms in the different standardization cases but some factors and strategies seem to function well in a standards war while others work better in cooperative anticipatory standardization. Some common factors influencing all type of standardization process are IPR, timing of the introduction of products or service based on the standard, the power and the reputation of the companies backing a standard, pricing of products and services based on the standard and the availability of complementary products for the standard. Some factors that seem to differ between standards wars settings and anticipatory standardization are installed base, ability to innovate and technological leadership. Factors that influence only the development of anticipatory standards are the buying power of the companies involved, and the involvement in written contributions to the standard from the companies.

3 THE OPEN MOBILE ALLIANCE

This study is based on an in-depth case study of the Open Mobile Alliance (OMA). The data was gathered through a mixed methods approach (Creswell 2003), consisting of participatory observation in the standardization meetings from October 2006 until December 2007, 15 interviews with the participants and studies of membership documents from OMA, W3C, 3GPP and 3GPP2.

The goal in this paper is to present some of the factors that influence the behavior of OMA members and see how this factors influence their strategies towards membership, both within OMA and towards other standardization organizations.

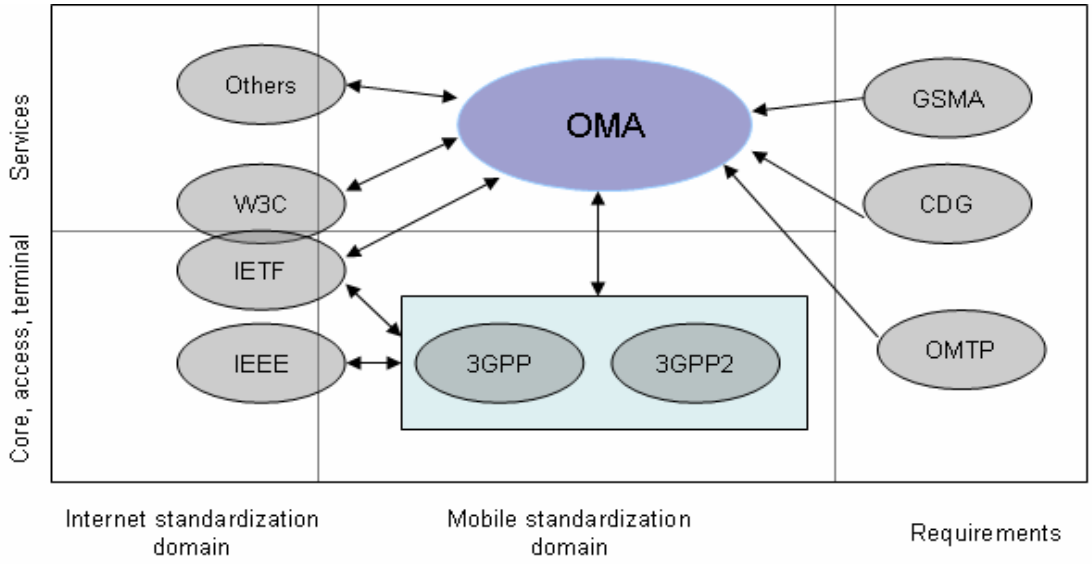

Figure 2 - OMAs place in the standardization world

OMA is a consortium with a goal of developing standards for 3G services. The standards that OMA develops fit in on the service level of the mobile infrastructure. OMA develops both standards for end user services like MMS, IM, and mobile broadcasting, operator oriented services like device management and data synchronization and content services like DRM and content distribution. OMAs work fits on top of the work done by 3GPP and 3GPP2 and get input from standardization organizations like W3C and IETF and interest organizations like GSMA and CDG, see figure 2.

OMA brings together all the actors of the mobile industry, both new and old, and is therefore an interesting organization to study if one should learn more about how new actors influence the standardization work or how new standards are being shaped by an enlarged industry domain. According to Tilson and Lyytinen (2006) the battles over different mobile standards have moved from the air interfaces to higher level interfaces (services) and become more important. The major actor in this area is OMA.

OMA is a large standardization organization with more than 400 members. OMA is a public organization and must have a board of directors and a yearly general assembly where the members for the board are elected. The board of directors is the top level in OMA and is in charge of running OMA. The Board of directors has delegated the responsibility of the technical work to the technical plenary. The technical plenary oversees the technical work, endorses and approves new work items and technical specifications. The actual work is done by working groups. This is similar to other large standardization organizations in the telecommunication domain like 3GPP and ITU-T.

The members can choose from four different membership categories; sponsor, full, associate and supporter. The influence of the different member categories vary. One first decision for a firm is what member level they shall choose. The rights of members can be divided into leadership activities and technical activities. The leadership activities can be further divided into possibility for board membership, chair technical work, participates in votes and act as vice chair or chair sub working groups. The technical activities can be divided into contribute technical requirements, provide review comments, participate in the technical plenary, approve or support new work items and participate in the OMA interoperability testing. The following table shows some of the benefits of the different member categories in OMA.

Membership rights	**Sponsor**	**Full**	**Associate**	**Supporter**
Can be elected to the board of directors	ALL	Y	N	N
Can sit on committees	Y	Y	N	N
Can chair technical work	Y	Y	N	N
Can be vice chair or chair sub groups	Y	Y	Y	N
Can contribute requirements	Y	Y	Y	N
Can provide review comments	Y	Y	Y	Y
Can participate in technical plenary	Y	Y	Y	N
Can initiate and support a work item	Y	Y	Y	N
Can approve work item	Y	Y	N	N
Can participate in OMA interoperability tests	Y	Y	Y	Y

Table 1 - Overview of the OMA membership rights

Firms being on the board of directors have more options to influence the overall direction of OMA than other companies. The same goes for companies that acts as chairs or editors for the technical plenary or the work groups. The sponsors automatically get one board member. This is the only difference in rights between sponsors and full members.

Sponsors, full and associate members can participate in the technical plenary but only sponsors and full members can vote. Sponsors and full members can approve new work and new specifications. They are the ones that have the final say in what to do and the approval of the standards. The associate members can participate in the working groups and thereby influence the work during the

whole specification process. The only rights of the supporters are to be able to test their products for interoperability and get access to pre-publication drafts and comment them in the review process. Sponsor and full members can influence both the strategic direction of OMA as well as the content of the standards, while the associate members can influence the technical work but have not much influence in the strategic direction of OMA as a whole.

OMA also divides their members according to what type of company they are; Operator, manufacturer, IT/application vendor or other (Government, research, consulting, finance and content providers). This distinction will be used in this paper.

4 FINDINGS AND DATA ANALYSIS

In this chapter some factors that are influencing companies strategic behavior within OMA are presented, and these factors are linked to the type of membership the different groups choose. The overlap in membership with 3GPP/3GPP2 and W3C are also presented. This is to illustrate the strategies for cooperation the different groups choose. The numbers are from July 2007.

From the interviews, observation and document studies the following factors have emerged as important to the strategic behavior of firms within OMA.

- *Intellectual property rights (IPR)*. This is the single most important factor steering the strategic behavior of firms. Getting your IPR into a specification means that you can charge for your IPR or use the IPR as a trading factor with other firms.
- *Time to market*. Getting the standard ready in time is important. Introducing a new service is crucial for the operators. Introducing a service too early can mean that the customers are not ready and the equipment and content are missing. Introducing a service too late can mean that some other service or firm is taking the market.
- *Consensus and alliance building*. To get a solutions through you must get a 2/3 support for it. OMA has a formal voting procedure, but much of the work is based on consensus. Firms have to make alliances and strive for general consensus to get a solution approved.
- *Customer relationship*. This is a strange factor for standardization, but many companies participate in this standardization activity to get close to their customers. In the telecommunication sector the main buyers of products based on the developed standards are the operators and the handset manufacturers. So in this case the customers, the end-users of the products also participate in the standardization process. Participating in standardization organizations where their customers also participate is viewed by many as a good way to market their products and services.

Members can take on different roles and positions within OMA. Having a board members is viewed strategic important by the members. The role of chair of the technical plenary or a work group is also important for the members. The first can influence the long term direction of the organization while the latter can influence the technical content of the standards produced.

Being a sponsor yields most influence but is also the most expensive option. You can also become a board member as a full member, but then you have to compete with other full members for the position. Only sponsor and full membership gives a position to influence both the overall direction of the standardization and the technical content of the standards developed. Having the right to vote is important for firms that want to block proposals or get their specific requirements into a specification. Having the right to approve work items can set the direction of the future work of the organization. Being able to support a work item can give influence in the creation stage of new work. The chairs influence the work by setting the agenda and steering the face-to-face meetings. Their influence can be quit decisive for the outcome of a standard.

Choice of membership type

Here we look at what type of membership the different actor groups choose. Their choice of membership level can be viewed in accordance with the strategic factors they see most important. There are 17 sponsor members in OMA 5 operators, 11 manufacturers and 1 IT/application provider. If you look at the total of sponsor and full members you have 37 operators, 44 manufacturers, 32 application vendors and 4 others. Operators, manufacturers and application vendors have all more than 25 % of the total membership in the organization each.

If we look at the groups that can not vote, hold a chair or have a board member the distribution of type of companies is the following: Only one small operator chose not to have full voting rights, 11 % are manufacturers, most of which are smaller Asian firms, 14 % are classified as others including many consulting and testing firms while the majority (74%) are IT/application vendors

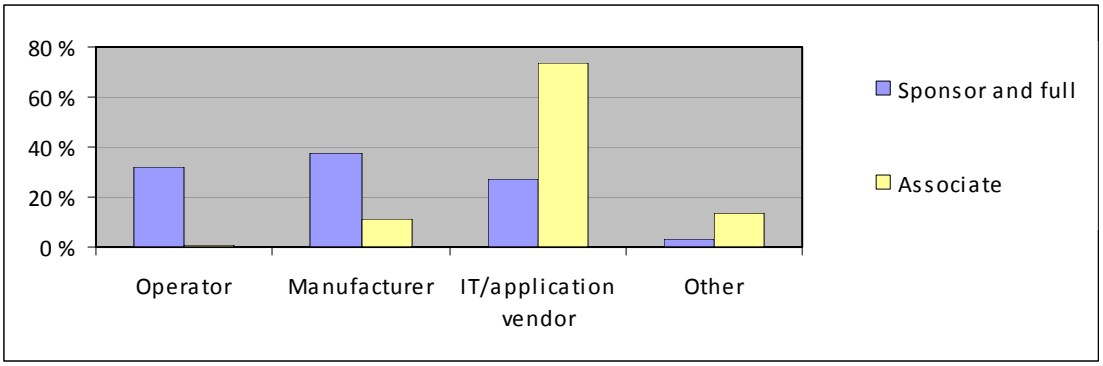

Figure 3- Distribution of membership between types of companies in OMA

The difference between the distributions is striking. Almost ¾ of the companies that choose to participate in the development process but not in the strategic direction of the organization or in the final voting are IT/application vendors.

Overlap in membership with other standardization organizations

Creating alliances can also take place outside of OMA. Many companies have a large participation in standardization and they meet in other settings. Here we look at the overlap in membership with the telecommunication organizations 3GPP and 3GPP2 and the IT standardization organization W3C. This can tell us something about which direction companies tend to focus on, IT or core telecommunications. 3GPP and 3GPP2 are in charge of standardizing the infrastructure which OMA is building services on top of. W3C is creating services for the Internet infrastructure, but these services should also be available for the mobile communication infrastructure. One have focus on services in an adjacent realm while the two others have focus on the technical part of the underlying infrastructure.

Below is the distribution per type of company of OMA members participation in W3C and 3GPP/3GPP2 presented. In total more than 77 percent of the full and sponsor members in OMA participate in 3GPP, 3GPP2 or W3C. The numbers show that over 90 percent of the operators are members in 3GPP/3GPP2 while only 20 percent are members in W3C. The numbers are similar for the manufacturers where 80 percent are members in 3GPP/3GPP2 while only 25 percent is members in W3C. The numbers for the IT/application vendors are different. Here over 40 percent of the members are members of 3GPP/3GPP2 and over 40 percent is members of W3C.

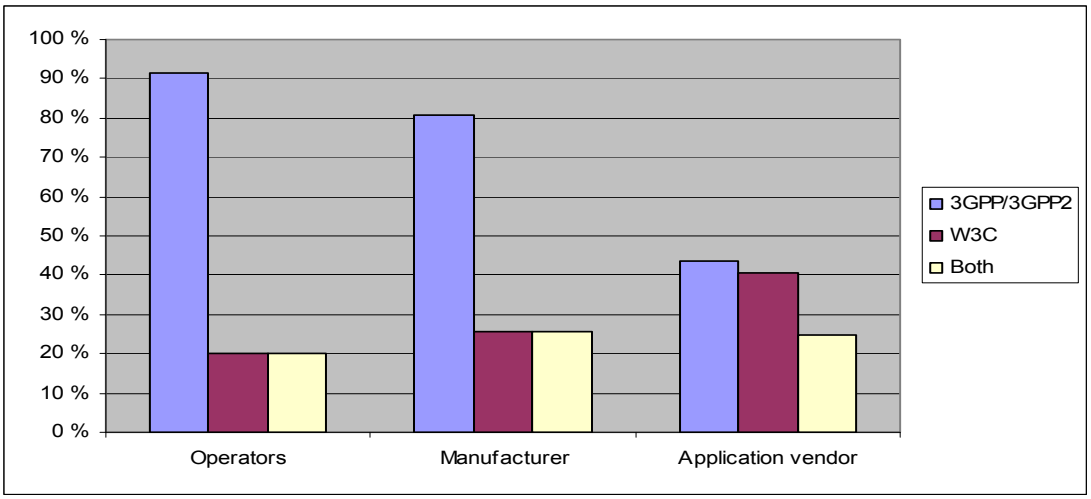

Figure 4- Oma members participation in 3GPP/3GPP2 and W3C

If we go deeper into the numbers we can see that all the operators and manufacturers that are members of W3C are also members of 3GPP/3GPP2. 25 percent of the application vendors are members of both W3C and 3GPP/3GPP2. Going behind the numbers we see that all sponsor members are member of 3GPP, while 64 percent are members of 3GPP2 and 70 percent are members of W3C. This indicates that the sponsor members have broad standardization participation.

If we look at the number of associate companies that are members of other organizations the numbers are low. Only 18 percent of the associate members participate in 3GPP, 3GPP2 or W3C.

5 DISCUSSION

It is natural that different types of firms choose different strategies within a standardization organization. Large companies with a lot of IPR would like to influence both the strategic direction of the organization and the concrete content of the standards. Smaller more specialized firms would like to influence the content of standards within their domain and make sure that work is started in their domain. The first group would be inclined to be a sponsor member while the latter would rather look towards an associate membership. Firms that shall apply the standards would like to influence the processes and the overall content of the standards and not focus on the technical content in detail. This would lead towards a full membership.

IPR

IPR is an issue both in competition between and within standards (Shapiro and Varan 1999). IPR has played a large role in the development of both the 2G and 3G mobile infrastructures (Bekkers, Verspagen et al. 2002; Goodman and Myers 2005). In both cases some companies have dominated the process by introducing their IPR into the process. The large manufacturers are the ones that use IPR as a general tool in the development of standards and can negotiate standards by having a large amount of IPR that they can trade with. The smaller more specialized companies try to get their IPR into specific standards and do not have the bargaining or trading power of the larger companies.

The manufacturers are the group that has the technological power and IPR towards the core product. As we can see from the numbers the manufacturers position themselves both in OMA and in 3GPP/3GPP2. This is because they need active involvement to get their IPR into the standards. Without their active involvement the organization might choose a competitors technology instead. It seems like they stick to their core competence in telecommunication and hope for others to bring

the complementary products into the standard. They do not involve themselves to much in activities in adjacent infrastructures.

The application providers that can be viewed as having complementary product knowledge are on the other hand interested in getting their complementary knowledge applied in more settings. For them it can be more beneficial to get their products into more infrastructures.

The operators who are the buyers are interested in getting a fair price for the end product and competition between different providers. All in all the different groups act according to the general literatures perspective of the importance of IPR (Weiss and Sirbu 1990; Grindley 1995; Shapiro and Varian 1999).

Time to market

The introduction of new mobile services is dependent on right timing (Steinbock 2005) and the coordination of the different actors (Lindmark, Bohlin et al. 2004). The operators are the one with most focus on this aspect. They are the ones to introduce the new services to the end-user. But without the support of the content providers and the manufacturers the service will not likely succeed. Within OMA the manufacturer are the ones pushing for fast development of standards and the one with the closest contact with the end-user. For many operators it is more important to get a service out on the right time than the technical content of the standard. For the manufactures and application vendors it is more a case of getting the technical part of the standard to their liking and thereby delaying the development time of a standard. An example of this is the development of the converged IP messaging standard in OMA where the operators are pushing for a phased development of the standards so they can introduce some services earlier while the manufacturers and application vendors want a slower and more complete development.

Timing of a standard is most crucial for the operators. They have to introduce new services in competition from Internet and broadcasting services. Here there is a competition between standards. Being to late might jeopardize the introduction of the whole service and let another standard win. Factors like installed base, access to complementary products and reputation is crucial for the operators. In some sense the manufacturers can be viewed as providing a complementary product to the service, but it is really a core component because the services would not work without handsets. The manufacturers need to have a production line ready so they can provide the operators with products. They compete between themselves. The first one to get a product ready might get a large share of the market from the operators. The application providers are again more on the complementary side, providing products to the operators.

The members in OMA adhere to the insights that to succeed in standardization you have to attract complementary products and time your standard right (Grindley 1995; Shapiro and Varian 1999).

Consensus and alliance building

Building personal and intra firm relationships is important for the actors in the telecommunication sector (Grundström and Wilkinson 2004). The actors in these domains tend to be experienced individuals that participate in many organizations (Jakobs, Procter et al. 2001).

In an organization like OMA where all actors are included, the companies can use the same strategies and mechanisms within the organization that they use for choosing where to standardize and whom to form alliances with between organizations.

Factors influencing the choice of alliance partner are the size of the alliance and the number of close rivals (Axelrod, Mitchell et al. 1995). Within OMA the operators are not in direct competition with each other, they operate in different markets and can introduce the same service (standard) in different markets. Operators need to ally with the manufactures and the application vendors to complement their service provision. The manufactures and application vendors are more direct competitors but they also have some degree of market separation. Some manufacturers are fierce

competitors and would not form alliances within OMA or otherwise with manufacturers they see as promoting rival standards. An example is the rivalry between CDMA and GSM manufacturers.

The OMA members seem to adhere to the insights that you should ally with firms that complement you and avoid your closest rivals (Weiss and Sirbu 1990; Besen and Farrell 1994; Axelrod, Mitchell et al. 1995).

Customer relationship

This factor that influencing OMA members behavior is not often mentioned in the general literature. The involvement of buyers in the standardization process is viewed as an important factor for the success of an organization by Weiss and Sirbu (1990), but they do not imply that companies participate just because the potential buyers are members in the organization. The observation that standardization participation by one group of companies is driven by the need to create customer relationship and promote themselves towards their peers is interesting. Many application vendors view the participation in standardization as a prerequisite for selling products to the operators later on.

Asking the application vendors why they participate in OMA they answer that this is where their customers is. They participate to uphold their existing customer relationships and get new relationships. Without the participation of the operators the application vendors would turn their participation towards other organizations. The fact that the majority of application vendors choose associate membership indicates that they are more concerned about their presence than actual influence in the direction of the organization.

Choice of membership strategies

From the analysis we can see that the different groups have different strategies for their participation. The operators need a hand on the strategic direction of OMA and tend to choose full or sponsor membership. They also extend their participation in standardization to other organizations in the telecommunication field. They have a vertical approach and try to be members in all standardization groups within their field. The manufacturers have a similar approach as the operators. They too engage in standardization within their field, but they also open up for participation in standardization of adjacent value chains. The manufacturers membership strategy within OMA are more diversified that the operators. They choose primarily full or sponsor membership while small manufacturers choose associate membership. The large manufacturers need to vote on technical issues to get the solution their alliance is promoting through.

The application vendors have another approach towards membership. They choose associate or supporter membership, while large application vendors choose full membership. This can be due to the fact that they do not need a hand in the direction OMA is going and have no need for voting on technical standards. They provide complementary products and will adapt to the standards being developed. They can also easier adjust their production since they provide software while the manufactures provide hardware. The application vendors have a higher degree of adaptability since they work more on the complementary side. They also form alliances with a large number of operators and manufactures since companies tend to ally with partners that can complement their products (Axelrod, Mitchell et al. 1995)

The operators and the large manufacturers have a vertical approach where they try to influence every part of the value chain/domain they are part of. They would like to control everything from the core infrastructure to the services running on top of it and work together in many standardization organizations to uphold this control.

The application vendors have a horizontal approach. The majority of application vendors have no hope of dominating the whole value chain they are a part of and rather opt for a part in many different value chains. Since their products are more adoptable they tend to be present in standardization within more domains/value chains.

6 CONCLUSION

The operators are most influenced by time-to-market and choose sponsor and full membership. They also participate in standardization activities within their primary domain. They have a vertical strategy and try to influence the whole mobile infrastructure. Within OMA they tend to focus on the strategic direction of the organization and the quick delivery of standards.

The manufacturers are most influenced by IPR and choose primarily sponsor or full membership. They are more diverse than the operators since many small manufacturers choose an associate membership. The manufacturers with sponsor and full membership do as the operators and participate in 3GPP and 3GPP2. They also have a vertical strategy and try to influence the whole mobile infrastructure. Within OMA they focus on both the strategic direction of OMA and the technical content and IPR are more important than time-to-market.

The application vendors are influenced by customer relationship and IPR and choose a full or associate membership. More application vendors choose associate than full membership. The application vendors with full membership choose to participate in W3C instead of 3GPP or 3GPP2. They choose a vertical strategy focusing on getting their products into different infrastructures. Within OMA they focus on customer relationship and getting their specific IPR into the standards. They do not only contribute to the technological development of a standard, but by doing so they market their competency and solutions towards their largest customer group. Many companies view the participation in standardization as a prerequisite for selling products to the operators later on. It will be necessary to research this observation further to see if this is valid just for the telecommunication domain or is a factor influencing other standardization processes as well.

All type of companies are concerned with alliance building. The manufacturers and operators look towards organizations within their field of operation, the telecommunication sector. They have a vertical approach trying to participate in every level of the value chain and control it. The application vendors try to broaden their scope, and go outside their home domain. They have a horizontal approach trying to be a layer in many different value chains. The difference can be explained by what they provide, the operators add buying power and delivery of services, and the manufacturers provide the core products for the standards, while the application vendors provide complementary products.

Overall the participants have both a technical and a market perspective on their participation and participation in a standardization organization is more than a technical activity.

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